

NAME:

DATE:

**A2.Q1.BERMEL/LEMBO:    SYSTEMS OF EQUATIONS**

**(DAY S4)**

**MASTERY PRACTICE REVIEW**

**PLACE A BOX AROUND ALL ANSWERS**

This is a "what price/cost" problem.

1. Mike and Doris go to the MATH FUN STORE in Parsippany New Jersey.

Mike buys 10 notebooks and 3 calculators for \$270.

Doris buys 5 notebooks and 4 calculators for \$335.

Assuming all notebooks are the same price and all calculators are the same price ...

- A. Write a system of equations that can be used to find the cost of a notebook and the cost of a calculator at the MATH FUN STORE. Be sure to define each variable.

Mike  $10x + 3y = 270$

Doris  $5x + 4y = 335$

Define your variables

$x$  = price of notebooks

$y$  = price of calculators

- B. Solve the system of equations in part A using the method of **elimination**.

$$\begin{array}{rcl} 10x + 3y = 270 & \rightarrow & 10x + 3y = 270 \\ -2(5x + 4y = 335) & \rightarrow & -10x - 8y = -670 \\ \hline & & -5y = -400 \\ & & \frac{-5y}{-5} = \frac{-400}{-5} \end{array}$$

multiply by -2  
to get opposite  
coefficients

$$\boxed{y = 80}$$

plug this into one  
of the original  
equations

$$5x + 4(80) = 335$$

$$5x + 320 = 335$$

$$\frac{-320}{-320} \quad \frac{-320}{-320}$$

$$\frac{5x}{5} = \frac{15}{5}$$

$$\boxed{x = 3}$$

Final Answer  
 $(x=3, y=80)$

∴ This is a "what number" problem.  
(How many)

2. Tony sold 10 gym memberships for a total of \$244 a month. Student memberships cost \$20 per month and adult memberships cost \$42 per month. How many of each membership did Tony sell?

- A. Write a system of equations that could be used to find how many of each membership Tony sold? Be sure to define your variables.

How many?  
(# of)  $x + y = 10$

How much?  
(\$)  $20x + 42y = 244$

Define your variables  
 $x = \#$  of student memberships  
 $y = \#$  of adult memberships

- B. Solve the system in Part A using the method of **elimination**.

$-20(x + y = 10) \rightarrow -20x - 20y = -200$

$20x + 42y = 244 \rightarrow$   
 $\underline{20x + 42y = 244}$

$$\frac{22y}{22} = \frac{44}{22}$$

$$\boxed{y = 2}$$

Plug this into one of the original equations.

$$\begin{array}{r} x + (2) = 10 \\ -2 \quad -2 \\ \hline \end{array}$$

$$\boxed{x = 8}$$

Final Answer  
( $x = 8, y = 2$ )

3. Solve the system of equations using the method of **substitution**.

$$4x - 3y = 19$$

$$y = 2x - 3$$

Plug this into the top

$$y = 2(-5) - 3$$

$$y = -10 - 3$$

$$y = -13$$

Final Answer  
( $x = -5$ ,  $y = -13$ )

$$4x - 3(2x - 3) = 19$$

$$4x - 6x + 9 = 19$$

$$\begin{array}{r} -2x + 9 = 19 \\ \underline{-9} \quad \underline{-9} \end{array}$$

$$\begin{array}{r} -2x = 10 \\ \underline{-2} \quad \underline{-2} \end{array}$$

$$x = -5$$

Plug this into the original equation.

4. Solve the system of equations using the method of **substitution**.

$$5x - 6y = 1$$

$$x = 3y + 2$$

plug this into the top

$$x = 3(-1) + 2$$

$$x = -3 + 2$$

$$x = -1$$

Final Answer  
( $x = -1$ ,  $y = -1$ )

$$5(3y + 2) - 6y = 1$$

$$15y + 10 - 6y = 1$$

$$\begin{array}{r} 9y + 10 = 1 \\ \underline{-10} \quad \underline{-10} \end{array}$$

$$\frac{9y}{9} = \frac{-9}{9}$$

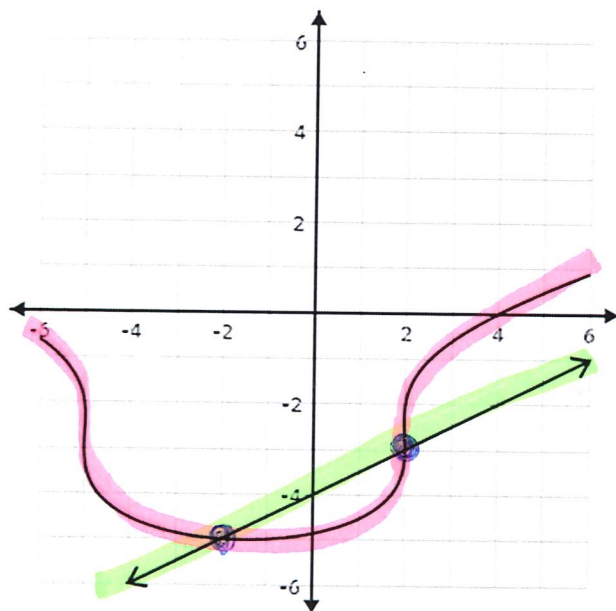
$$y = -1$$

plug this into the original equation

5. Solve the system of equations using the provided graph.

$$x^2 + (y+3)^2 - (y+3)^3 + 3x - 10 = 0$$

$$y = -4 + \frac{1}{2}x$$



$(-2, -5)$  and  $(2, -3)$

6. Determine if the point  $(x=2, y=100)$  is a solution to the system of equations.

$$5x^2 + 3\sqrt{y} = 50$$

$$-x + y = 102$$

Show all work.

No

$$5(2)^2 + 3\sqrt{100} = 50$$

$$5(4) + 3(10) = 50$$

$$20 + 30 = 50$$

TRUE



$$-(2) + (100) = 102$$

$$-2 + 100 = 102$$

$$98 = 102$$

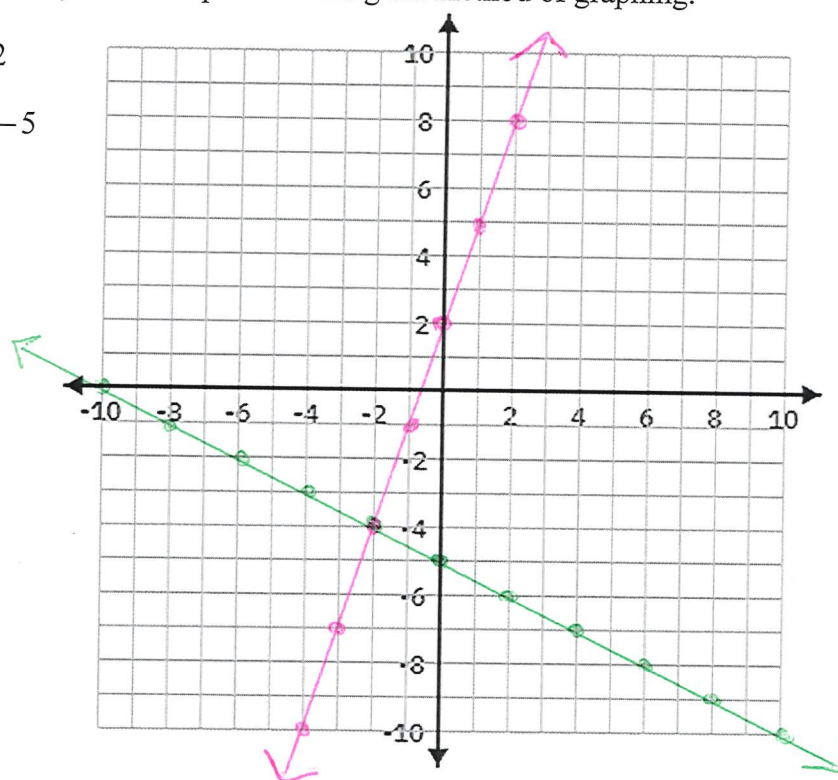
FALSE



7. Solve the system of equations using the method of graphing.

$y = 3x + 2$

$y = -\frac{1}{2}x - 5$

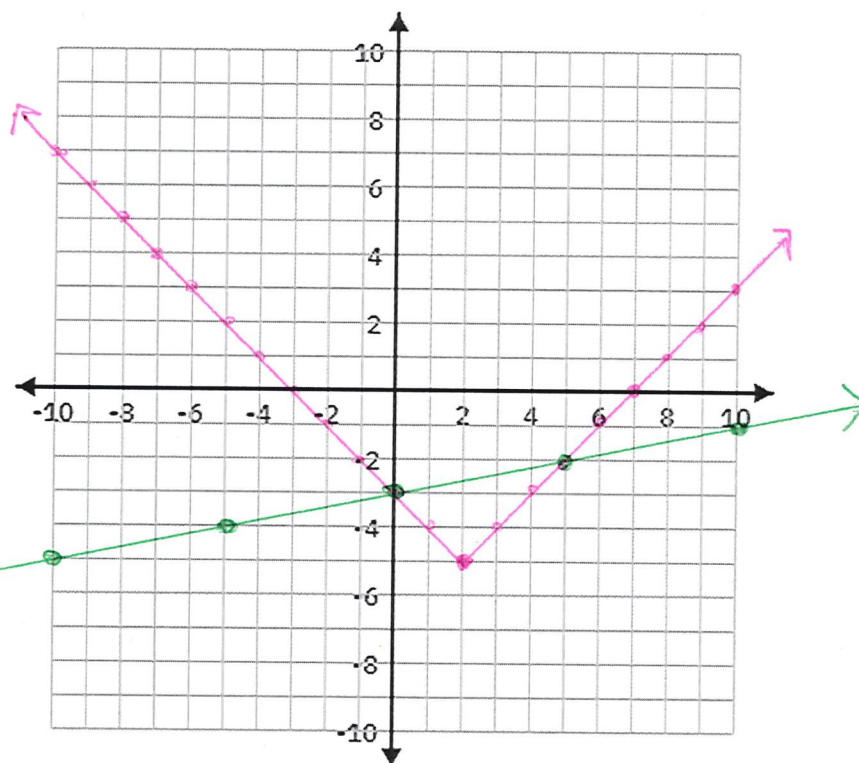


Solution  
(-2, -4)

8. Solve the system of equations using the method of graphing.

$y = |x - 2| - 5$

$y = \frac{1}{5}x - 3$



Solutions  
(0, -3)  
and  
(5, -2)